



NSL-701-9A

N ON P SILICON READOUT CELL

NSL-701-9A is an array of 9 photovoltaic cells constructed on a single piece of silicon. It is particularly intended as a readout of punched paper tape or cards, code wheels, etc. The response extends across the whole visible spectrum and on into the near infrared, matching well the output from an ordinary incandescent lamp.

The cell is produced by high temperature diffusion of an n-type impurity into a p-type base, yielding an n on p photovoltaic detector. The p-type sides of all segments have a common lead while the n-type sides are isolated from one another and have individual leads. Upon illumination the individual segments develop negative voltages with respect to the common lead. The application of a moderate positive voltage results in a small dark current.

The cells are fast in response, are uniform in response from segment to segment, have a low dark current when biased with a small reverse voltage, and have an output that remains constant over long periods of time. In these respects these cells are an improvement over similar cells made by the p on n process.

Mechanical Specifications (9 elements)

Overall dimensions	.200" x .880" x .140" thick
Center to center spacing	.100"
Sensitive area (per segment)	.080" x .160"
Mounting	Soldered to brass backing plate with tapped holes. Other mounting methods to special order.

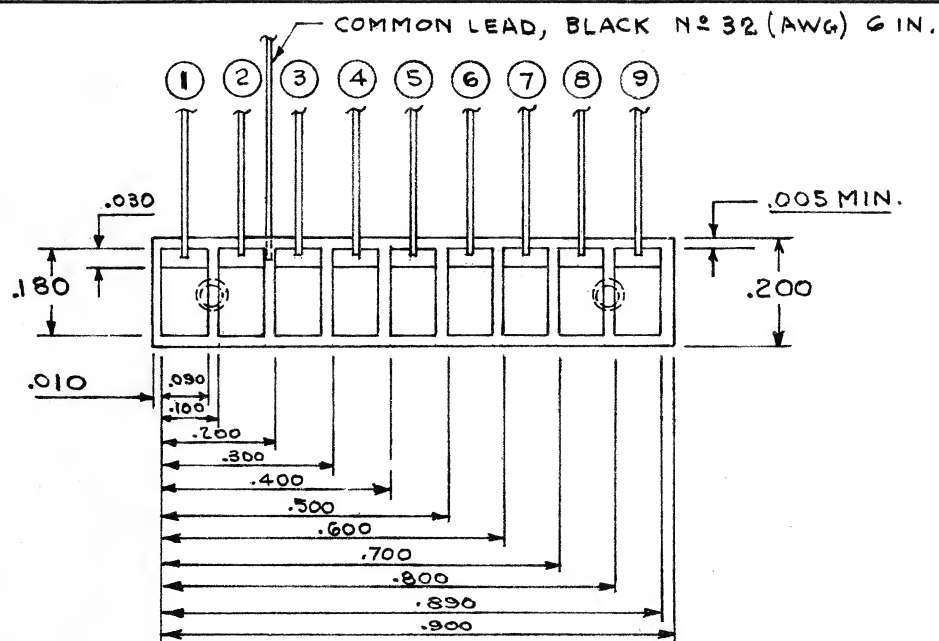
Similar Cells with 1 to 8 segments available.

Electrical Specifications (per segment)

Open circuit voltage *	.35 volts min.
Short circuit current	.30 ma min.
Current at 1 K Ohm load	.275 ma min. center value.
	Variations within a multi-element cell are within $\pm 10\%$ of the center value.
Reverse leakage current	10 μ A max. at -1.5 volts applied. Cell at 55°C in dark.
Speed of response (depends on circuit resistance)	8 Microseconds
Spectral response (useful range)	0.4 - 1.1 Microns
Spectral response (peak)	.85 Microns
Max. operating temperature range	-65°C to +150°C.

* Text Conditions: 500 Footcandles of illumination from lamp at 2800°K.

do it the LIGHT way

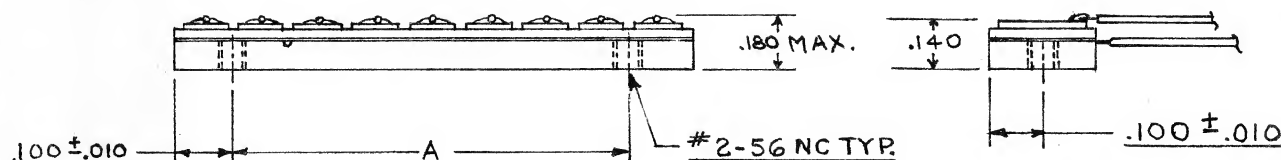


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NOTES:

CELL "DASH NO." INDICATES NUMBER OF ELEMENTS TO A CELL.

LEADS ARE NO. 32 (AWG) 6 IN. LONG COLOR CODED AS PER R.M.A. COLOR CODE.



CELL MOUNTING:

SINGLE ELEMENT CELLS (NSL-701-1A) SUPPLIED WITHOUT METAL BASE.

FOR TYPE NSL-701-2A & -3A, METAL BASE SUPPLIED WITHOUT HOLES,

FOR OTHER TYPES DIMENSIONS ARE AS INDICATED BELOW:

NSL-701-	-4A	-5A	-6A	-7A	-8A	-9A
"A"	.200	.300	.400	.500	.600	.700

EXCEPT
AS
NOTED

DECIMAL
± .005

FRACTIONAL

ANGULAR



NATIONAL SEMICONDUCTORS LTD.

2150 WARD ST., MONTREAL 9, CANADA

TEL: 744-5507 - Area Code 514

SCALE
NONE

DWG. BY J. TREMPER

APP'D. BY *mf*

TITLE
MULTI-ELEMENT SILICON READOUT CELLS
NSL-701-1A THRU -9A.

DATE
SEPT-3-65

DRAWING NO.

1498